

## **ULTRA GRAVITY DRY FRACTION PROCESSOR**

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### **Process**

The process commences by introducing slurry, sludge or some other semi-liquid-solid material (slurry) into the apparatus in a regulated fashion through an air-lock gate that allows the machine to maintain vacuum while introducing the material inside the vacuum chamber. The machine is on electronic scales that call for material as needed. The slurry enters the machine dropping into a horizontal screw conveyor that lays in a trough surrounded by warm water, i.e. heat exchanger. This starts heating the slurry to a point where the water instantly boils out of the solution, (flashes) leaving dry solids remaining.

To accomplish the flashing process, the slurry is conveyed along the hot trough, in a vacuum, absorbing heat to the point that the water flashes. The screw conveyors have agitating devices on them that breaks up the balls that form and fresh, restricted hot air is directed into the chamber at key points to facilitate the agitation of the dry material away from the wet. The dry solids are light enough that they are vacuumed out of the top of the chamber. If any of the slurry makes the other end of the screw conveyor, it is pushed into a flailing grinder and atomized. This facilitates more rapid flashing.

At this point, it either flash dries and is sucked out the vacuum outlets or falls into another screw conveyor to return back to the introduction point, heating it more, pushing it into another pulverizer, where it goes through the same process until it is warm enough to flash all the moisture from it

All of the slurry should be dry and vacuumed out by this point and due to the temperature-vacuum flashing, it should be virtually pathogen free. If by some chance there is any slurry left in the trough, it will be run around the circuit again. As the very rapidly moving air is exiting the chamber, it travels through one of 4 venturis, specially restricted outlets to increase the velocity of air exiting the chamber. This in turn drops the temperature to a point that the dry solids and moisture vapor would mix again. This problem is handled by heating the plenum back to chamber temperature and keeping it hot to the separator. At the separator, the dry solids and dust are removed from the mixture and the remaining high moisture hot air is vacuumed out through the pump.